Washington State Ferries

SUMMER SERVICE CONTINGENCY PLAN

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Washington State Ferries

Washington State Department of Transportation

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1 Introduction

Summer is Washington State Ferries' (WSF) busiest season. In addition to regular commuters who use WSF to get to work, school, shopping, and medical appointments, our ferries are enjoyed by visitors from around the world who are taking in Washington's scenic islands, outdoor adventurers playing in Washington parks and waters with their kayaks and bicycles, and families spending picturesque weekends around Puget Sound. With more than 24 million passengers each year, WSF's white and green ferry boats have become an iconic symbol of transport in the Pacific Northwest.

However, the incredible popularity of the ferry system and the high demand for ferry service in the summer presents many difficult challenges for WSF. In general, WSF transports 50 percent more people in summer than we do in winter, but with only 18 percent more hours of service. And while the ridership climbs each summer, we are unable to proportionally increase the number of boats, terminals, or crew that serve our routes. This puts pressure on the entire ferry system, as riders wait longer to board, crews work longer hours, and maintenance crews have fewer hours available to access equipment.

This document focuses on the service disruptions that result when a vessel is removed from service. There are numerous reasons for a vessel leaving service—not only mechanical issues, but also hard landings, groundings, and propeller shafts getting tangled in crab pot lines. Service disruptions have also occurred in prior years because of a lack of dispatchable crewmembers; however, this issue has largely been resolved in recent years, with minimal trips missed.

Our vessels operate more than 20 hours each day, 365 days a year. This puts stress on our fleet, which is complicated by additional factors:

- **Aging fleet:** The fleet has an average age of 30 years. Thirteen of our 22 ferries are more than 30 years old. Of those, five are at least 50 years old. This aging fleet requires more maintenance to deal with problems such as steel corrosion, replacing or repairing obsolete equipment, and preservation projects that have been deferred, leading to a higher risk of vessel breakdown.
- **Limited spare vessels:** With 19 vessels in service and two vessels rotating out for maintenance, WSF typically has only one funded standby vessel for emergency relief throughout the summer. Unscheduled repairs can quickly consume this extra capacity, and there have been periods during most recent summers when the entire fleet was either in service or out for repairs with no relief vessel available. This is far below the transit industry standard of a 20% spare ratio.
- **Limited slips at terminals:** Twelve of the 20 ferry terminals have only one landing slip for operations. If there are any problems with the single slip, the route is closed; vessels will need to be rerouted to other terminals or service suspended until the landing slip is opened.

When we have an equipment failure during other seasons, we are often able to shift vessels around, juggle maintenance needs, and reallocate resources across the system. However, in the summer when we are stretched thin, taking a boat or dock out of service for repairs is more complicated.

As frustrating as it is when a vessel leaves service, it is important to remember that it is still relatively rare. Our reliability rating is regularly better than 99 percent. Nevertheless, unplanned service disruptions are felt by more customers in the summer and have a negative impact on those businesses who rely on the summer tourism and travel that our ferries provide. As such, we are making the Summer Service Contingency Plan that has been in place for the past year at WSF publicly available for the first time in the hopes that our customers and partners may have a better understanding of both the challenges and opportunities that the summer brings.

The goals of the Summer Service Contingency Plan are to:

- provide a measure of **predictability** for how WSF will manage unplanned vessel service disruptions and maintain service through the summer season;

- be **transparent** about decisions, considerations and priorities when service adjustments necessitate unplanned vessel maintenance;
- outline how we will **communicate** with customers, community members, and other partners.

WSF is the largest ferry system in America. We also strive to be the best. We hope this plan gives you a greater understanding of the challenges and opportunities we face each summer.

2 Vessel Maintenance and Service Planning

The level of service that WSF is able to provide is highly dependent on its biennial budget as determined by the state legislature. In addition to providing the funding to operate and maintain particular vessels and set levels of service with the appropriate labor and fuel calculations, the budget also allocates capital funds for vessel preservation, improvements and new construction. Currently, WSF is budgeted to operate 22 vessels, with one vessel on "standby" to act as a service relief vessel.

Once the budget is in place, WSF works across departments to determine where each vessel will reside for the biennium – i.e., determining the vessel's "home port" – and when that vessel will have its required maintenance. Both the "where" and "when" come with a significant number of constraints. For example, a vessel may be too large to physically fit in the dock of a particular home port, or a vessel may be too fast or too slow for a particular route, making it not a good fit for that route. (See Table 1.)

In addition, WSF vessels are highly regulated by the United States Coast Guard and must meet stringent requirements before it is allowed to carry passengers. Some of these requirements include an underwater inspection twice every five years, an annual safety inspection, quarterly random inspections and additional testing of sprinkler systems and marine evacuation systems. Scheduling these tests and any related maintenance projects is often a delicate negotiation between the vessel's maintenance needs, its assigned route's service needs, and the scarce availability of dry dock space in Puget Sound.

Among the policies or assumptions we adhere to during this planning phase:

- WSF commits one vessel to service relief, or "standby."
- WSF schedules no more than two boats to be out for planned maintenance in the summertime.
- WSF tries to avoid situations where two vessels of the largest classes (Jumbo class or Jumbo Mark II class) are out at the same time.

Approximately five to six months before the summer season actually begins, WSF planners work with community partners, transit agencies, and technical staff to review the previous year's ridership and on-time performance statistics, and identify minor changes in the schedule. If a more significant schedule change is implemented, planning may need to begin a year in advance, and the community engagement is more extensive. At least two months before the start of the season, WSF finalizes and posts the sailing schedule in time for reservations to open for the San Juan, Sidney, and Port Townsend routes. It is at this point that the vessel assignments that were used to plan the schedule become the baseline for our summer service.

Each summer, we identify one service relief vessel that can be used in the event a vessel breaks down anywhere in our system. The challenge to WSF is when vessels need maintenance or repairs unexpectedly. As the fleet ages, this is bound to happen more frequently. (See Table 2 in the appendix for the current summer's vessel assignments.)

The response to an unplanned vessel outage depends on the expected duration of an outage, its location, and the availability and capacity of the service relief vessel. In some seasons, we have a standby vessel that is rarely put into use. In other seasons, the standby is in use almost the entire season, and WSF makes difficult decisions about how to provide service.

For the majority of Summer 2017, the *Kitsap* (approximate 124-vehicle capacity) was initially assigned to act as WSF's service relief vessel. Unfortunately, the *Kitsap* suffered a major engine failure in May. The 144-vehicle *Hyak* was then identified as the service relief vessel. The *Hyak* was in service for most of the summer, replacing other vessels until it experienced mechanical issues and had to leave service in late August.

For Summer 2016, the *Kitsap* (approximate 124-vehicle capacity) was WSF's assigned service relief vessel. Changes to vessel maintenance schedules and unplanned maintenance activities were minimal. As a result, the *Kitsap* was in service for 1 week, from August 15-22.

For Summer 2015, the *Tillikum* (approximate 87-vehicle capacity) was WSF's assigned standby vessel. At the start of the summer sailing season, the *Tillikum* was scheduled to be in service for 1 week from August 24-31, allowing for scheduled maintenance on the *Tokitae*. The *Evergreen State* (approximate 87-vehicle capacity) was in an emergency standby position, while the *Hiyu* (approximate 34-vehicle capacity) was scheduled to be decommissioned. Meanwhile, the *Tacoma* (approximate 202-vehicle capacity) and the *Kaleetan* (approximate 144-vehicle capacity) were out for planned maintenance.

- The *Tillikum* was put into service on July 8 to fill in for unplanned maintenance on the *Elwha*. It stayed in service through the end of the season (10+ weeks).
- The *Puyallup* was removed from service on the Edmonds/Kingston route from July 13-July 18. As a result, the *Tillikum* was moved from the Fauntleroy/Vashon Island/Southworth route to the Edmonds/Kingston route. The *Evergreen State* was put into service as a third vessel on that route. Decommissioning of the *Hiyu* halted, and it was put into service in Fauntleroy.

Table 1: "Fit" of Vessel Classes to Routes

Size	Class	Veh Spaces	Vessel	Home Port	Route: South → North Point Defiance-Tahlequah PD-TAL	Fauntleroy-Vashon-Southworth FVS	Seattle-Bremerton SEA-BR	Seattle-Bainbridge SEA-BI	Edmonds-Kingston ED-KING	Mukilteo-Clinton MUK-CL	Port Townsend-Coupeville PT-KEY	Anacortes-San Juan Islands ANA-SJ	San Juan Interisland ANA-SJ 4	Anacortes-Sidney ANA-SID
Big	Jumbo Mark II	197	Tacoma	Seattle	Oversize for route	Oversize for route	More capacity than needed	Meets demand	Meets demand	Lengthy loading & off-loading	Will not fit in Keystone Harbor	Oversize for route	Oversize for route	No SOLAS
			Wenatchee	Seattle										
			Puyallup	Kingston										
	Jumbo	186	Spokane	Edmonds	Oversize for route	Oversize for route	More capacity than needed	Meets auto demand; may not meet peak passenger demand	Meets demand	Lengthy loading & off-loading	Will not fit in Keystone Harbor	**Fall to Spring:** Oversize for route; **Summer:** Lengthy loading and off-loading	Oversize for route	No SOLAS
			Walla Walla	Seattle										
	Super	139	Hyak	Seattle	More capacity than needed	More capacity than needed	Good fit for route	Moderate overloads; may not meet peak passenger demand	Moderate overloads	Poor fit to terminal. Lengthy loading & off-loading	Will not fit in Keystone Harbor	Good fit for route	More capacity than needed	Hyak, Kaleetan, Yakima: No SOLAS
			Kaleetan	Seattle										
			Yakima	Anacortes										
			Elwha	Anacortes										Elwha: SOLAS
	Olympic	141	Tokitae	Mukilteo	More capacity than needed	More capacity than needed	Good fit for route	Moderate overloads; may not meet peak passenger demand	Moderate overloads	Good fit for route	Will not fit in Keystone Harbor	Good fit for route	More capacity than needed	No SOLAS
			Samish	Anacortes										
↓			Chimacum	Seattle										
	Issaquah	120	Issaquah	Fauntleroy	More capacity than needed	Good fit for route	Good fit for route	Can't meet demand	Can't meet demand	Good fit for route	Will not fit in Keystone Harbor	Good fit for route	More capacity than needed	Issaquah, Kitsap, Kittitas, Cathlamet: No SOLAS
			Kitsap	Seattle										
			Kittitas	Mukilteo										
			Cathlamet	Fauntleroy										
			Chelan	Anacortes										Chelan: SOLAS
	Issaquah 90	89	Sealth	Fauntleroy									Sealth: Good fit for route	Sealth: No SOLAS
	E-State	81	Tillikum	Anacortes	More capacity than needed	Replace faster Sealth	Too slow to keep schedule	Can't meet demand	Can't meet demand	Replace Issaquah Class if needed for capacity	Will not fit in Keystone Harbor	Too slow to keep schedule	Good fit for route	No SOLAS
			Klahowya (ret)	Anacortes										
Small	Kwa-di Tabil	62	Chetzemoka	Pt Def	Good fit for route	Lengthy loading & off-loading	Too slow to keep schedule	Can't meet demand	Can't meet demand	Can't meet demand	Good fit for route	Can't meet demand	**Fall to Spring:** Good fit for route; **Summer:** Moderate overloads	No SOLAS
			Salish	Pt Town										
			Kennewick	Pt Town										

3 Contingency Plan

In the event that a vessel or terminal unexpectedly goes out of service, WSF's first priority is the safety of our passengers and our crew. If a vessel breaks down in transit, our focus is first moving it to dock as soon as possible so that passengers can disembark. Typically, vessel crew have already been working hard to identify the cause of the problem, and once the scene has been secured, they will contact WSF headquarters to help assess the situation. Crews are often dispatched from WSF headquarters and the Eagle Harbor maintenance facility to help troubleshoot the problem. We also notify the Coast Guard so that they can assess the situation.

Whether WSF can restore service depends on a number of variables, including the nature of the problem, whether WSF has parts available for repair or must purchase them elsewhere, whether the repair will require dry dock space, whether dry dock space is available, the cost of the repair, and more. If it is determined the issue is severe and will last more than a day, our service relief vessel (if available) is dispatched to provide substitute service as soon as possible.

In general, during the **first day** following a vessel taken out service, the route where the vessel is assigned will operate without that vessel. The reasons for this are twofold:

- **WSF needs time to make an assessment** as to whether the cause for removal can easily be fixed or will last more than one day. Often, vessels can be repaired the same day.
- **It is a logistical challenge to move a vessel the same day**, especially if it is a mechanical breakdown and occurs on a route far from Eagle Harbor. WSF needs time to assemble crews to move vessels to new routes, and our customers need to plan accordingly.

There are a couple of exceptions to the general rule that vessel reassignments will not occur on the first day of a vessel's removal from service:

- **WSF cannot strand foot passengers.** On the Seattle/Bainbridge Island, Seattle/Bremerton, and Point Defiance/Tahlequah routes, it is necessary to maintain evening peak passenger capacity to get foot passengers back home.
- **WSF can rearrange some schedules on multi-destination routes with more than two vessels.** In the San Juan Islands and on the Fauntleroy/Vashon/Southworth route, alternate schedules are in existence that allow WSF to reassign existing vessels to cover important connections to island communities.

In general, on the **second day** after a vessel has been taken out of service and when a **relief vessel is available,** the relief vessel will be put into service. The flow chart shown in Figure 1 in the appendix illustrates the actions for a service disruption on Day 1 and Day 2, given the vessel availability for the current year.

When a **relief vessel is not available**, WSF must make difficult decisions about reallocating its service. To do this, WSF does its best to take into consideration a number of factors, including:

- **Minimal Service.** A minimum of one vessel needs to remain on any given route to maintain basic transportation connections.
- **Alternative Routes**. WSF considers whether an impacted route has an alternative route via another ferry or a drive-around/bridge access.
- **Traffic/Ridership**. WSF considers how many people use the route, its utilization rate, and mix of traffic. On routes with higher commuter traffic, a service disruption on a weekend is more tolerable than a service disruption on a weekday. On some routes serving recreational destinations, it is often more crucial to maintain full capacity on weekends.

- **Percent of Service Loss**. If a route with two vessels loses a vessel, it represents a 50% loss of service. If a route with more than two vessels loses a vessel, the percentage of service loss is smaller—e.g., the loss of one vessel on a three-vessel route is 33%, the loss of on vessel from a five-vessel route is 20%.
- **Special Events.** Community events and their economic impacts (e.g., Seahawks games, summer festivals).
- **Reservations**. WSF's current reservation system does not allow it to redistribute reservations to other sailings. WSF may temporarily adjust the reservation system's business and operational rules to address the issue until normal service is restored and resulting traffic impacts are mitigated. To the extent possible, WSF will prioritize travel for customers holding a reservation for any sailings during the service day over customers traveling from the same terminal without a reservation.
- **Liferafting.** The capacity of vessels to routes.
- **Resources**. Crew availability; the ability of other vessels to operate safely and efficiently on other routes; availability of maintenance resources (Eagle Harbor, drydock).
- **Costs**. Where the vessel's home port is relative to where it might be moved. It typically costs $14,000 per boat move, plus additional costs to operate vessels away from their home port.
- **Other Impacts**. Terminal construction work, nearby highway projects, etc.
- **Duration of Disruption**. Has a direct impact on all other factors: traffic/ridership, resources, reservations, costs, etc.

Each service disruption involves a different mix of factors that will shape our response.

4 Operational Adjustments

Aside from major disruptions, downsizings or breaks in service, any delays or changes in schedule impact our customers and have a ripple effect throughout the service day. Customers consistently tell us that predictability is extremely important to them, as they depend on the ferry system for their travel needs and they want every assurance we do everything we can to adhere to the printed schedule.

In the event vessels are off schedule, the following tactics will be implemented to mitigate further delays:

- The Watch Supervisors will be notified of any modifications to the printed sailing schedule prior to implementation. The vessel Master will also be part of the decision making process.
- Terminal Supervisors and Captains will work collaboratively during daily operations and when special circumstances arise.
- Terminal employees will communicate as much of the load information as is necessary to the vessel loader (overload, oversized vehicles, destination, etc.).
- Vessel crews will call for traffic immediately after the security sweep.
- Vessel crews will position themselves on the car deck to help maximize the load of vehicles, such as pulling up vehicles, allowing 12 inches or less between bumpers, and loading three motorcycles per vehicle space.
- Mates will be present on the auto deck, in compliance with SMS (Safety & Management System) policy.
- Terminal employees will lower the transfer span and apron on each arrival and raise the bridge after departure to adjust for tide in between vessels arrivals.

- Once the terminal has sent a standard number of vehicles for a typical load, the vessel loader will make an educated count of vehicles to be loaded at the end of the vessel (no secondary count will be permitted).
- Limit the number of cross-traffic interruptions at intersections we control when loading and off-loading.
- Delay walk-on traffic until the end of the loading period (for terminals that load through the auto deck only).
- Cancel a mid-load bicycle break (where the onloading of vehicles is paused midway through to allow bicycles to load).

5 Service Disruption Communications

In the interest of transparency and accessibility, WSF works hard to communicate any service disruptions to the traveling public and to the broader community. As soon as is practicable after a service disruption occurs, our Customer Service staff or a member of our Operations staff (in the overnight hours) will send an email service alert to those who have subscribed for this service at bit.ly/WSFalert. The email alert automatically populates the WSF website and sends a Tweet via the WSF Twitter feed. Affected legislators, local elected officials, and Ferry Advisory Committee representatives are contacted as well.

For most minor disruptions, email alerts and website updates will suffice. For longer-term disruptions, WSF employs a more comprehensive communications strategy that may include printed materials that can be distributed on the vessels and at terminals, media outreach, or community meetings. Customer Service staff also have the ability to update messages on the Highway Advisory Radio System (HARS) and the Variable Message Systems (VMS) that are accessible from the highway.

The WSF Customer Contact Center is open 7 days a week from 7 a.m. until 5:30 p.m. and can be reached by calling 206-464-6400 or 888-808-7977; or by dialing 511 from within the state of Washington. Agents are also available to respond to emails at wsfinfo@wsdot.wa.gov.

6 Conclusion

It is very difficult for WSF customers and the communities it serves when sailings are cancelled or vessels downsized. Each situation has a series of unique characteristics that shape the response to meet as much of the customer need as possible. **This contingency plan aims to provide some predictability.**

Appendix: Summer 2017 Details

Table 2: Summer 2017 Vessel Assignments

Route	Primary Assignment			Substitute Assignment*		
	Vessel Position	Vessel Name	Vehicle Capacity	Vessel Name	Vehicle Capacity	Dates
Anacortes - San Juans - Sidney	ANA-SID 1	Chelan	124			
	ANA-SJ 2	Yakima	144			
	ANA-SJ 3	Samish	144			
	ANA-SJ 4 (Interisland)	Tillikum	87			
	ANA-SJ 5	Elwha	144			
Port Townsend - Coupeville	PT-KEY 1	Kennewick	64			
	PT-KEY 2	Salish	64			
Mukilteo - Clinton	MUK-CL 1	Kitsap	124			
	MUK-CL 2	Tokitae	144	Kittitas	124 (-20)	6/25-7/9 (15 days)
Edmonds - Kingston	ED-KING 1	Puyallup	202			
	ED-KING 2	Walla Walla	188			
Fauntleroy - Vashon - Southworth	FVS 1	Issaquah	124			
	FVS 2	Sealth	90			
	FVS 3	Cathlamet	124			
Pt. Defiance - Tahlequah	PD-TAL 1	Chetzemoka	64			
Seattle - Bainbridge	SEA-BI 1	Tacoma	202			
	SEA-BI 2	Wenatchee	202			
Seattle - Bremerton	SEA-BR 1	Kaleetan	144			
	SEA-BR 2	Chimacum	144			
Service Relief (standby)		Hyak	144			
Maintenance Reserve		Spokane	188	Planned Maintenance		6/25-10/1
		Kittitas	124	Planned Maintenance		7/10-10/1
Retired Vessels		Klahowya	87			

*as of the date when summer season reservations went live, 4/25/2017

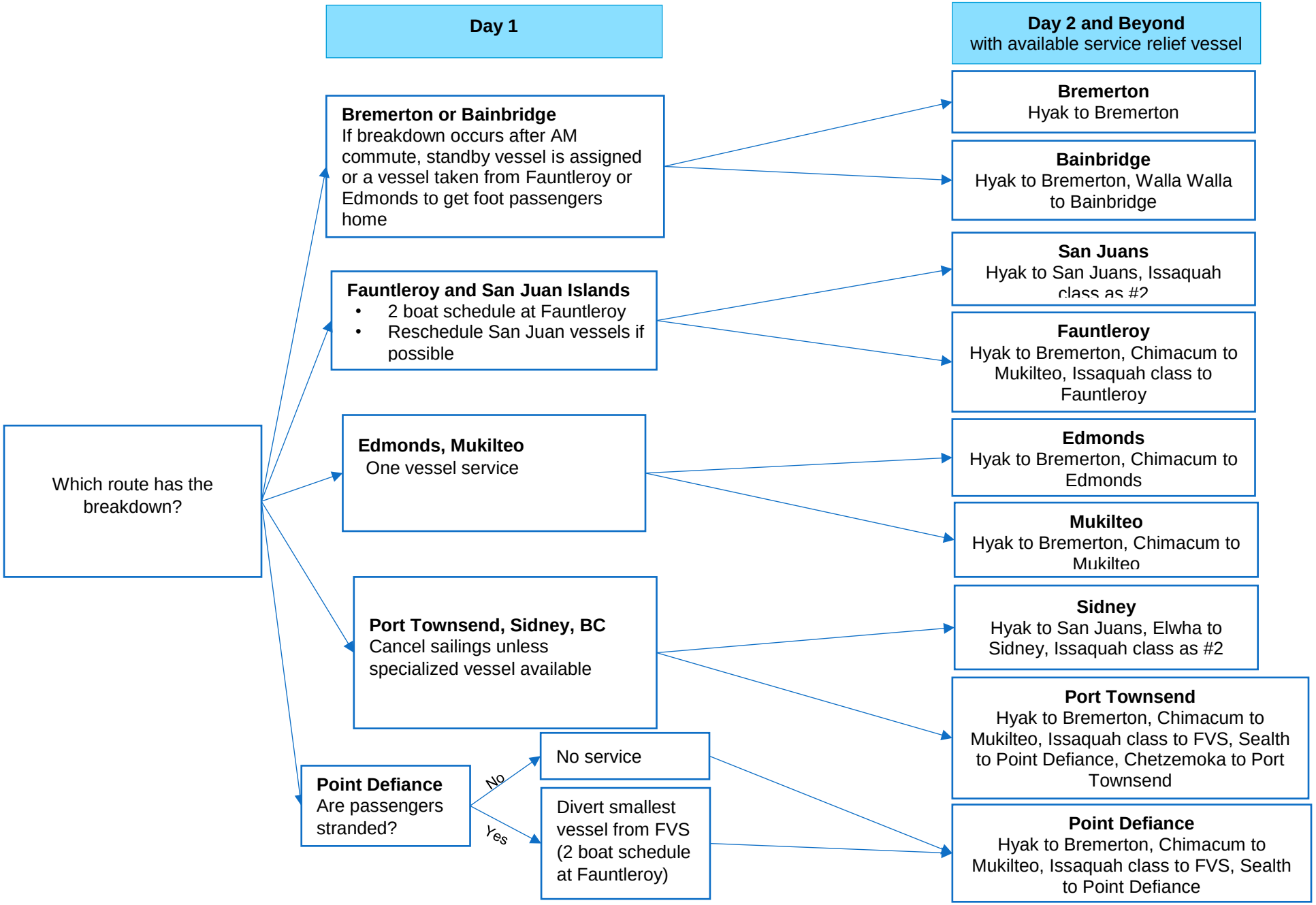

Figure 1: Contingency Plan Flowchart Summer 2017